

REMARKS

In a preliminary matter, claim 6 is amended herein to include the feature that the surfactant or surfactant mixture must include sodium methyl cocoyl taurate. Concomitantly, claims 9, 10 and 11 are amended to comport in their antecedent basis with newly amended claim 6. A basis for this amendment appears in the specification on page 8 at lines 19 to 34, in the Examples of the invention, and in the claims as originally filed, *inter alia*. Accordingly, no new matter is introduced into the application by this amendment.

The Official Action issued on May 28, 2008, has repeated the rejection of claims 6, 8, 10 and 11 under 35 U.S.C. 103(a) as obvious over European Patent No. 0 402 213 by Klock (hereinafter “Klock”) in view of U.S. Patent No. 3,153,009, issued to Rombach et al. (hereinafter “Rombach”). In addition, the rejection of claim 9 under 35 U.S.C. 103(a) as unpatentable over Klock in view of Rombach and further in view of U.S. Patent 6,472,054, issued to Aurenty et al. (hereinafter “Aurenty”), has been repeated. Finally, the rejection of claim 12 under 35 U.S.C. 103(a) as unpatentable over Klock in view of Rombach further in view of U.S. Patent 5,559,175 issued to Kroggel et al. (hereinafter “Kroggel”) has also been repeated.

These are the sole substantive reasons set forth in the Official Action why the present claims should not be allowed. The facts and reasoning set forth earlier in the prosecution are neither withdrawn nor abandoned. In addition, Applicants respectfully traverse these rejections for the further reasons set forth below.

In particular, the present claims define a process that provides an unpredictable, inventive solution to a problem that exists in the prior art. As is stated in the M.P.E.P. at § 2141(I), “When considering obviousness of a combination of known elements, the operative question is thus ‘whether the improvement is more than the predictable use of prior art elements according to their established functions.’” Quoting *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, 82 USPQ2d 1385, 1396 (2007). In addition, “[r]easonable expectation of success is the standard with which obviousness is determined.” M.P.E.P. at § 2141(II), *citation omitted*. It is moreover well-established that the reasonable expectation must be found in the prior

art, and must not be based on knowledge of Applicants' disclosure. M.P.E.P. at § 2142.

Here, Klock describes a process that is difficult and inefficient because it must be carried out under carefully controlled conditions in which the temperature of the reaction mixture is tightly controlled and systematically varied over set periods of time. See, e.g., English translation of Klock, 2nd paragraph of page 1:

...one maintains the mixture under agitation for one duration higher than 30 minutes at a temperature from 8 to 150 C, one raises then the temperature of the mixture up to a value maintained between 60 and 800 C in a lapse of time ranging between one hour and half and 4 hours, when the aforementioned value of temperature is reached, one incorporate a base in the mixture until obtaining a pH ranging between 9 and 11, one maintains then the temperature with the aforementioned value for one duration higher than fifteen minutes, one separates the polyvinylbutyral precipitated mixture, and one washes it with water.¹

It had been believed that this procedure was necessary to produce a polymer having a M/R ratio that is high enough for the polymer to be useful as the interlayer of a safety glass windshield. (The M/R ratio is correlated with the flex modulus.) See Klock, page 2 at lines 37 to 41; English translation at top of page 3.

In contrast, the claimed process can be run at a single temperature, or within a narrow temperature range. See Claim 6 and the Examples of the invention. In particular, in Example 1, the reaction temperature is held at 90°C. This is the procedure followed in Examples 2 through 26; in Examples 27 through 40, the reaction temperature is varied over ranges that are generally smaller than the range of 82°C to 91°C.

¹ See also page 3 of Klock, 6th paragraph: "The manufacturing process preferred is that which gathers the operations described in the publication of French patent 2.401.941 already quoted..."

Advantageously, the feature of running at a single temperature, or within a narrow temperature range, enables the elimination of the extra regulation and equipment, such as heat exchangers, that are required to run a process with a controlled temperature gradient.

Surprisingly, the M/R ratio of the polymer produced in the claimed process is lower than that which is considered necessary in the Klock reference, and yet the product still has a tensile creep that is low enough for the polymer to be useful as the interlayer of a safety glass windshield. See Klock, page 3 at lines 7 to 18; English translation, last two paragraphs of page 3 and first paragraph of page 4.

It had been known that materials having a lower M/R ratio could be suitable for this use, if higher levels of surfactant were added to the reaction mixture. See Klock, page 3 at lines 1 to 6; English translation, 5th and 6th paragraphs of page 3. Higher surfactant levels entail a number of known disadvantages, though, including increased material costs, excessive foaming in the reaction vessel, an additional washing step to remove excess surfactant from the polymer, and unacceptable optical defects in the final product. See Klock, page 1 at lines 25 to 33; English translation, 4th full paragraph of page 1. See also Rombach, column 2 at lines 16 to 22.

It has now unexpectedly been discovered, however, that the surfactant may be kept at an advantageously low level, if the surfactant is sodium methyl cocoyl taurate or a mixture of sodium methyl cocoyl taurate with sodium dioctylsulfosuccinate or sodium lauryl sulfate.

Significantly, Rombach, when considered individually, provides no teaching or suggestion regarding the stereochemistry of the polymer, or the role of the type and level of the surfactant in determining the stereochemistry (M/R ratio). Nor is there, in Rombach, any mention whatsoever of sodium methyl cocoyl taurate, the surfactant required by the plain language of newly amended claim 6, or of tensile creep, which is correlated both with the polymer's stereochemistry and the surfactant type and

level. It follows by logic that, when considered in combination with Klock, Rombach does not add to what is taught or suggested by Klock on these subjects.

To summarize, then, the problem of producing a polymer that is suitable for use as the interlayer of a safety glass windshield using a simplified process is solved by using a single-temperature process. The polymer thus produced is acceptable, despite its lower M/R and its lower level of surfactant, because of the selection of a particular surfactant or surfactant mixture.

Applicants respectfully submit that the foregoing facts constitute evidence of unexpected superior results that are obtained through the claimed processes. Applicants further respectfully submit that these unexpected superior results are sufficient to overcome any *prima facie* case of the obviousness of newly amended claim 6 that is based on Klock in view of Rombach.

With respect to the tertiary references cited in the Official Action, Aurenty has been cited in support of the proposition that sodium methyl cocoyl taurate is functionally equivalent to sodium dioctyl succinate, dodecyl benzenesulfonate, and several other surfactants. Office Action of November 28, 2006, at page 6; Aurenty in column 6 at lines 57 to 64. Aurenty, however, whether considered alone or in combination with Klock and Rombach, provides no teaching or description that would lead one to expect any surprising advantages whatsoever based on the identity or amount of a surfactant, much less the surprising advantages described with particularity above. Therefore, newly amended claim 6 is not obvious over Klock in view of Rombach and further in view of Aurenty.

Last, Kroggel is cited to support the proposition that all strong mineral acids are interchangeable in Applicants' claimed processes. Office Action of November 28, 2006, at pages 6 to 7. Once more, this proposition is inapposite to Applicants' claimed processes. For example, in stark contrast with the compositions that are the products of Applicants' claimed processes, the dispersions described by Kroggel are free of emulsifiers and surfactants. See Abstract of Kroggel. Kroggel, therefore, whether considered alone or in combination with Klock and Rombach, also provides

no teaching or description whatsoever that would lead one to expect surprising advantages based on the composition or amount of a surfactant. Therefore, newly amended claim 6 is not obvious over Klock in view of Rombach and further in view of Kroggel.

Accordingly, Applicants respectfully request that the rejection of claim 6, as amended herein, under 35 U.S.C. § 103 be withdrawn upon reconsideration. Furthermore, claims 8 to 12 depend, directly or indirectly, from claim 6. It follows by statute that claims 8 to 12 are also not obvious over the cited references, for at least the same reasons that newly amended claim 6 is not obvious. Consequently, Applicants further respectfully request that the rejections of claims 8 to 12 also be withdrawn upon reconsideration.

Conclusion

Should any fee be required in connection with the present response, the Examiner is authorized to charge such fee, or render any credit, to Deposit Account No. 04-1928 (E.I. du Pont de Nemours and Company).

In view of the foregoing amendments and remarks, it is believed that pending claims 6 and 8 through 12, as amended herein, are in condition for immediate allowance, and such action is earnestly solicited. Should the Examiner believe that an interview or other action in Applicants' behalf would expedite prosecution of the application, the Examiner is urged to contact Applicants' undersigned attorney by telephone at (302) 892-1004.

Respectfully submitted,

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